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Amdt. dated 21 February 2006  
Reply to Office Action of 16 November 2005

### REMARKS

Nine (9) claims remain in the application: claims 1-9.

Claims 1, 5, and 8 have been amended to more clearly define the invention. The present application as originally filed supports these amendments. No new matter has been added.

#### ***Claim Rejections – 35 U.S.C. § 112***

Concerning items 1-2 of the Office Action, claims 1 and 5 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing new matter, i.e., subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor at the time the application was filed had possession of the claimed invention. Applicant respectfully traverses this rejection and requests reconsideration for the following reasons.

Amended claim 1 recites:

An apparatus comprising: a discone antenna including a cone-shaped element, the physical shape of which is at least partially defined by at least one pleat, wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element.

[Emphasis added]

Amended claim 5 recites:

An apparatus comprising: a bicone antenna including two cone-shaped elements, the physical shape of at least one of which is at least partially defined by at least one pleat, wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element.

[Emphasis added]

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Applicant respectfully submits that the underlined text of amended claims 1 and 5 does not constitute new matter and is supported by the specification and drawings as filed. Support for the underlined text may be found in the specification as filed in at least FIGS. 4-5, and paragraphs [0014] and [0015]. For example, FIG. 4 clearly shows a discone antenna 75 with a conical portion 80 with pleats including "wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element," as claimed in amended claim 1. Paragraph [0014] explains that the pleats extend about the circumference of the cone-shaped element: "For example, a discone antenna 75 includes a conical portion 80 that includes pleats that extend about a circumference of the conical portion." FIG. 5 likewise shows a bicone antenna 100 with two conical portions 110, 120 at least one of which has pleats including "wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element," as claimed in amended claim 5. Paragraph [0015] explains that the pleats extend about the circumference of the cone-shaped elements: "Each of the two conical portions 110, 120 are respectively defined by pleats that extend about the respective circumferences 130, 140 of the two portions."

Thus, one of skill in the art would understand that the underlined text of amended claims 1 and 5 is not new matter to the application and that the inventor had possession of the claimed invention of amended claims 1 and 5 at the time application was filed. The Applicant respectfully submits that the rejection of claims 1 and 5 under 35 U.S.C. § 112 is without proper basis and should be withdrawn accordingly.

### ***Claim Rejections – 35 U.S.C. § 103***

#### ***Claims 1-4***

Concerning items 3-4 of the Office Action, claims 1-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,851,859 to Rappaport ("Rappaport") in view of U.S.

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Patent No. 3,987,456 to Gelin ("Gelin"). Applicant traverses the rejection for the following reasons.

Amended claim 1 is directed to a discone antenna that includes "a cone-shaped element, the physical shape of which is at least partially defined by at least one pleat, wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element."

In contrast, Rappaport teaches a conventional discone antenna that includes a tuning cavity. See, Rappaport, col. 2, lines 6-22. Rappaport does not describe or suggest "a discone antenna including a cone-shaped element, the physical shape of which is at least partially defined by at least one pleat, wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element" as recited in amended claim 1.

Gelin further contrasts with amended claim 1 by teaching a three-part antenna that includes two ring conductors and a pyramidal skirt. See Gelin, col. 2, lines 22-26. Gelin explains that "each of the faces of skirt is formed by an approximately plane surface 22" and that the surface is "in the form of an isosceles trapezoid." Gelin, col. 2, lines 37-40. The plane surfaces of Gelin are joined in vertexes that each have an included angle of greater than 180 degrees in the outward direction relative to the principal or longitudinal axis of the skirt. See Gelin, FIG. 1e. Thus, the plane surfaces 22 shown and described in Gelin do not include a pleat as recited in amended claim 1, i.e., "wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element."

Accordingly, neither Rappaport nor Gelin, whether considered alone or in combination, disclose or suggest the limitations of amended independent claim 1. As a result, the rejection is without proper basis, and claim 1 is patentable over the cited references. Because claims 2-4 depend

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from claim 1, they are patentable for at least the same reason. Applicant, therefore, requests reconsideration and withdrawal of the rejection of claims 1-4 under 35 U.S.C. § 103(a).

#### Claims 5-7

Concerning item 5 of the Office Action, claims 5-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,656,166 to Klopach et al. ("Klopach") in view of Gelin. Applicant respectfully traverses the rejection and requests reconsideration for the following reasons.

Amended claim 5 recites "An apparatus comprising: a bicone antenna including two cone-shaped elements the physical shape of at least one of which is at least partially defined by at least one pleat, wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element."

In contrast, Klopach teaches a conventional biconical dipole antenna that includes "means within the near field of the antenna to couple a portion of the energy of the biconical dipole into the means and re-radiate the energy at a retarded phase with respect to the energy radiated or received by the biconical dipole to achieve circular polarization." See Klopach, col. 1, lines 26-31. Klopach explains that the coupling means "are a plurality of passive members each of which includes three diamond shaped metal elements." See Klopach, col. 1, lines 31-33. For the rejection the Examiner stated that Klopach teaches "a bicone antelma [sic] including two cone-shaped elements (Klopach, figure 3, conical member 12 and 14) whose physical shape is at least partially defined by at least one pleat which Klopach does not explicitly disclose." Applicant respectfully disagrees with this characterization of Klopach, as Klopach does not teach or suggest pleats, explicitly or inherently, but rather teaches separate passive elements that "are mounted between the conical members 12 and 14 with the minor diagonals of the diamond shaped elements 22, 24 and 26 being perpendicular to the axes of the conical members and the major diagonals of the elements being at an angle to the axes of the conical members." Klopach, col. 2, lines 4-9. Accordingly, Klopach does teach or suggest a

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bicone antenna as claimed in amended claim 5, i.e., a bicone antenna including two cone-shaped elements the physical shape of at least one of which is at least partially defined by at least one pleat, wherein each pleat includes a vertex defining an included angle of less than 180 degrees as directed away from a principal axis of the cone-shaped element.

Because Klopach fails to cure the deficiencies noted above for Gelin, neither of these references, whether considered alone or in combination, disclose or suggest the limitations of amended independent claim 5. Accordingly, the rejection is without proper basis, and claim 5 is patentable over the cited references. Because claims 6-7 depend from claim 5, they are patentable for at least the same reason. Applicant, therefore, requests reconsideration and withdrawal of the rejection of claims 5-7 under 35 U.S.C. § 103(a).

#### ***Claim Rejections – 35 U.S.C. § 102***

Concerning items 6-7 of the Office Action, claims 8-9 were rejected under 35 U.S.C. § 102(b) as being anticipated by Rappaport. Applicant respectfully traverses this rejection and requests reconsideration for the following reasons.

For a rejection under 35 U.S.C. § 102(b), the cited reference must teach each and every element as arranged in the claim(s) at issue. In this situation, Rappaport fails to teach all of the elements of claim 8.

Amended claim 8 recites the following:

An apparatus comprising: an antenna including a disc-shaped element, the physical shape of which is at least partially defined by a fractal geometry.  
[Emphasis added]

For the rejection of claims 8-9, the Examiner stated that Rappaport teaches “an antenna including a disc-shaped element whose physical shape is at least partially defined by a fractal

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geometry.” Further, in the Response to Arguments section of the Office Action, the Examiner stated that the “fractal geometry is determined as a self-similar structure results from the repetition of a design and it could be any shape or size; therefore, Rappaport’s dish antenna has a shape which belonged to the fractal geometry [sic].” Applicant respectfully traverses this characterization of Rappaport.

One of skill in the art would understand that a disc as taught by Rappaport is not a type defined by a fractal geometry. An antenna element having a fractal geometry, as defined in U.S. Patent No. 6,140,975 (assigned to the Applicant and incorporated into the subject application by reference), is one that “is substantially a deterministic fractal” and “has a self-similar structure resulting from the repetition of a design or motif (or “generator”) that is replicated using rotation, and/or translation, and/or scaling.” See U.S. Patent No. 6,140,975, col. 5, lines 1-8. Because Rappaport teaches only a plain disc used for antenna element, Rappaport does not teach an antenna including a disc-shaped element that is “at least partially defined by a fractal geometry” as is recited in claim 8.

Thus, Rappaport is not a proper basis for a rejection of claim 8 under 35 U.S.C. § 102(b) and claim 8 is therefore patentable over Rappaport. Because claim 9 depends from claim 8, it is patentable for at least the same reasons as claim 8. The rejection of claims 8-9 should be withdrawn accordingly.

### **Conclusion**

In view of the amendments and remarks submitted herein, applicant believes that all claims in the present application are in condition for allowance, and respectfully requests a Notice of Allowance for the application.

If a telephone conference will expedite prosecution of the application, the Examiner is invited


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to telephone the undersigned.

Authorization is hereby given to charge our deposit account, no. 50-1133, for a one-month extension of time under 37 C.F.R. § 1.136, or any other required fee(s).

Respectfully submitted,  
McDermott, Will & Emery

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